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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,536	02/19/2002	Takeyuki Itabashi	A8319.0014/P014	1688

24998 7590 01/15/2004

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EXAMINER

WONG, EDNA

ART UNIT PAPER NUMBER

1753

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/076,536

Applicant(s)

ITABASHI ET AL.

Examiner

Edna Wong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 is/are allowed.
- 6) ☒ Claim(s) 2-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

This is in response to the Amendment dated December 11, 2003. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Response to Arguments

Specification

The abstract of the disclosure has been objected to.

The objection to the abstract has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 112

Claims 4-8 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 4-8 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

I. Claims 2-4 have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Datta et al.** (US Patent Application Publication No. 2002/0064592 A1) in combination with **JP 2000-144438** ('438) and Applicants' admitted prior art (specification, page 18, lines 2-19).

The rejection of claims 2-4 under 35 U.S.C. 103(a) as being unpatentable over Datta et al. in combination with JP 2000-144438 ('438) and Applicants' admitted prior art is as applied in the Office Action dated September 11, 2003 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that JP '438 discloses a plating solution as a reducing agent. Such a plating solution is different from a plating solution using glyoxylic acid as a reducing agent. In response, JP '438 teaches that reducing agents, such as formaldehyde (HCHO) and glyoxylic acid (CHOCOOH), are contained in the plating liquid used here by non-electrolytic copper plating (page 1, ¶ [0006]). Thus, JP '438 teaches a plating solution using glyoxylic acid as a reducing agent. Nevertheless, the function of glyoxylic acid (i.e., reducing agent) in a solution does not distinguish the solution composition from the prior art.

Applicants state that the methanol contained in the JP '438 solution is inevitably formed by Cannizzaro's reaction of formaldehyde. In response, the methanol contained in the JP '438 solution has to have been added because no methanol is formed by Cannizzaro's reaction of glyoxylic acid: $2 \text{CHCOOH} + 2 \text{OH} \rightarrow \text{C}_2\text{O}_4^{2-} + \text{HOCH}_2\text{COOH} + \text{H}_2\text{O}$ (page 2, ¶ [0007] and [0008]).

Applicants state that the JP '438 does not teach that Cannizzaro's reaction of glyoxylic acid can be restricted by intentionally adding methanol to a plating

solution using glyoxylic acid as a reducing agent as in the present invention. In response, the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by the Applicants. *In re Linter* 458 F 2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F 2d 688, 16 USPQ 2d 1897 (Fed. Cir. 1990), *cert. denied*, 500 USPQ 904 (1991); and MPEP § 2144.

Applicants state that since the plating solution of present claim 2 does not contain formaldehyde and glyoxylic acid does not decompose to methanol, methanol by Cannizzaro's reaction is not generated. In response, the solution of present claim 2 is opened to contain formaldehyde and the claim language of present claim 2 does not recite anything about decomposing glyoxylic acid to methanol or generating methanol by Cannizzaro's reaction. It is well settled that unpatented claims are given the broadest, most reasonable interpretation and that limitations are not read into the claims without a proper claim basis therefor. *In re Prater* 415 F. 2d 1393, 162 USPQ 541 (CCPA 1969); *In re Zeltz* 893 F. 2d 319, 13 USPQ 1320.

Applicants state that in the present invention, methanol is intentionally added into a plating solution but is not a decomposed compound inevitably formed by Cannizzaro's reaction. The use of glyoxylic acid as a reducing agent

and further adding methanol into a plating solution according to the invention of present claim 2 is not taught or suggested by Datta or JP '438, even when the references are taken in combination. In response, JP '438 teaches "In addition, although adding a methanol in the plating method was performed in order to prevent degradation of the plating liquid resulting from a Cannizzaro reaction ..." (page 2, ¶ [0007] and [0008]). JP '438 teaches adding methanol into the plating solution. The disclosure of reference must be considered for what it fairly teaches one of ordinary skill in the art.

The motivation to add methanol to the plating solution of Datta would be in order to prevent degradation of the plating liquid resulting from a Cannizzaro reaction as taught by JP '438 (page 2, ¶ [0007] and [0008]). The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by the Applicants. *In re Linter* 458 F 2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F 2d 688, 16 USPQ 2d 1897 (Fed. Cir. 1990), *cert. denied*, 500 USPQ 904 (1991); and MPEP § 2144.

Furthermore, claim 2 as presently written does not exclude methanol as a decomposed compound inevitably formed by Cannizzaro's reaction.

Applicants state that the inclusion of the specification at page 18, lines 2-19 in the rejection of claim 2 as "admitted" prior art is not understood. In

response, Applicants discloses that the conventional plating solution shown on page 18, lines 2-19, is a formulation of a prior art plating solution. Thus, it appears that Applicants are disclosing or admitting that the formulation on page 18, lines 2-19, is prior art or not invented by the Applicants.

II. Claims **5 and 6** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Datta et al.** (US Patent Application Publication No. 2002/0064592 A1) in combination with **JP 2000-144438** ('438) and Applicants' admitted prior art (specification, page 18, lines 2-19) as applied to claims 2-4 above, and further in view of **JP 07-268638** ('638).

The rejection of claims 5 and 6 under 35 U.S.C. 103(a) as being unpatentable over Datta et al. in combination with JP 2000-144438 ('438) and Applicants' admitted prior art as applied to claims 2-4 above, and further in view of JP 07-268638 ('638) is as applied in the Office Action dated September 11, 2003 and incorporated herein. The rejection has been maintained for the reasons as discussed above.

III. Claims **7 and 8** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Datta et al.** (US Patent Application Publication No. 2002/0064592 A1) in combination with **JP 2000-144438** ('438) and Applicants' admitted prior art (specification, page 18, lines 2-19) as applied to claims 2-4 above, and further in view of **JP 07-268638** ('638).

The rejection of claims 7 and 8 under 35 U.S.C. 103(a) as being unpatentable over Datta et al. in combination with JP 2000-144438 ('438) and Applicants' admitted prior art as applied to claims 2-4 above, and further in view of JP 07-268638 ('638) is as applied in the Office Action dated September 11, 2003 and incorporated herein. The rejection has been maintained for the reasons as discussed above.

IV. Claim 9 has been rejected under 35 U.S.C. 103(a) as being unpatentable over **Datta et al.** (US Patent Application Publication No. 2002/0064592 A1) in combination with **JP 2000-144438** ('438) and Applicants' admitted prior art (specification, page 18, lines 2-19) as applied to claims 2-4 above.

The rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over Datta et al. in combination with JP 2000-144438 ('438) and Applicants' admitted prior art as applied to claims 2-4 above is as applied in the Office Action dated September 11, 2003 and incorporated herein. The rejection has been maintained for the reasons as discussed above.

Response to Amendment

Claim Objections

Claim 9 is objected to because of the following informalities:

Claim 9

line 4, it is suggested that the words "electro plating" be amended to the

word -- electroplating --.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5

line 4, "the plating bath" lacks antecedent basis. It is suggested that the word "bath" be amended to the word -- solution --.

Claim 6

line 4, "the plating bath" lacks antecedent basis. It is suggested that the word "bath" be amended to the word -- solution --.

Claim 7

line 4, "the plating bath" lacks antecedent basis. It is suggested that the word "bath" be amended to the word -- solution --.

Claim 8

line 4, "the plating bath" lacks antecedent basis. It is suggested that the

word "bath" be amended to the word -- solution --.

Appropriate correction is required.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

Claim 1 defines over the prior art of record because the prior art does not teach or suggest an electroless copper plating solution comprising copper ion, a complexing agent for copper ion, a reducing agent for copper ion and a pH adjusting agent, wherein said reducing agent for copper ion is glyoxylic acid or a salt thereof, said pH adjusting agent is potassium hydroxide, and said electroless copper plating solution contains at least one member selected from the group consisting of metasilicic acid, a salt of metasilicic acid, germanium dioxide, a salt of germanic acid, phosphoric acid, a salt of phosphoric acid, vanadic acid, a salt of vanadic acid, stannic acid and a salt of stannic acid in an amount of 0.0001 mol/L or more.

The prior art does not contain any language that teaches or suggests the above. *Datta et al.* do not teach wherein the electroless copper plating solution contains at least one member selected from the group consisting of metasilicic acid, a salt of metasilicic acid, germanium dioxide, a salt of germanic acid, phosphoric acid, a salt of phosphoric acid, vanadic acid, a salt of vanadic acid,

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stannic acid and a salt of stannic acid in an amount of 0.0001 mol/L or more.

Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

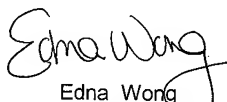
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1495.


Edna Wong
Primary Examiner
Art Unit 1753

EW
January 12, 2004